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San Francisco Bay
Survey

SURVEY OF WATER CONDITIONS IN LOWER SAN FRANCISCO BAY 1953

A REPORT PREPARED FOR THE CITY OF SAN JOSE
SANTA CLARA COUNTY, CALIFORNIA

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BROWN AND CALDWELL
CIVIL AND CHEMICAL ENGINEERS
66 MINT STREET
SAN FRANCISCO, CALIFORNIA

WET REP 197

COPY

SURVEY OF WATER CONDITIONS

LOWER SAN FRANCISCO BAY

1953

Sewage from the city of San Jose and from other cities and communities in the same general area has for many years been discharged without treatment to the lower or southern end of San Francisco Bay. This practice has resulted not only in gross pollution of the receiving waters but has become a principal cause, particularly during the past decade, of a seasonal atmospheric condition manifested over a wide area by a sulfide odor, a tarnishing of household silverware, and a blackening of painted surfaces. Construction of sewage treatment plants is scheduled to be undertaken in the fairly near future and will serve to minimize, or perhaps correct completely, the disagreeable effects which are now so apparent.

Although the design has been completed, construction of a treatment plant to meet the needs both of San Jose and of adjacent sanitation districts has been delayed because of an inability to obtain the land required for the secondary treatment operation, which consists of stabilization and disinfection in 1500 acres of oxidation ponds. In view of this delay and because some thought is being given to the possibility in the meanwhile of constructing only the primary treatment facilities, a need has developed for information which will show not only the extent and degree of pollution presently occurring but will be useful in the future in demonstrating the improvement brought about by bringing an end to the discharge of untreated sewage. As the first step in developing such information, the city of San Jose retained the firm of Brown and Caldwell, consulting civil and chemical engineers, to make a survey of conditions in Coyote Creek and in the adjacent waters of the lower end of San Francisco Bay.

An agreement covering the required sampling and analysis program was approved by the City Council on June 22, 1953. This report presents all data and information developed during the course of that program and provides a record of conditions which prevail in the receiving waters before, during, and after the seasonal discharge of food processing wastes carrying a heavy organic load. Most of the information is presented in tabular and graphic

form and is confined in a large degree to the actual field and laboratory findings. As such it represents an integral step in determining first, the receiving capacities of the waters in question, and second, the effect, thereon of any treatment facilities subsequently constructed by the city of San Jose.

Scope of Survey

Samples for field and laboratory examination were taken during five different periods from the tidal waters of Coyote Creek and Lower San Francisco Bay. This program involved the collection of 990 samples from 27 widely separated stations and the making of over 2100 determinations. Composite samples of sewage from the San Jose outfall were taken during the last four of the five sampling periods.

Complete information on tide conditions was obtained from a continuous recording of tidal stages and by making frequent measurements of tidal velocities. In addition, soundings were made in Coyote Creek to determine vertical and transverse variations in tidal current velocity.

The dates of the five sampling periods were as follows:

Sampling Period 1	July 7-8, 1953
Sampling Period 2	August 18-19, 1953
Sampling Period 3	September 15-16, 1953
Sampling Period 4	October 22-23, 1953
Sampling Period 5	December 2-3, 1953

The duration of each period ranged from about 26 to 30 hours, or long enough to extend through a complete tidal cycle.

Acknowledgements

For their cooperation and assistance in conducting the sampling operations and developing the required information we are greatly indebted to the following agencies and individuals:

State of California Department of Fish and Game. This agency provided, at various times during the sampling program, the patrol and work boats Albacore, Bonita, Tuna and Minnow and their crews.

Regional Water Pollution Control Board, Region 2, and the Bureau of Sanitary Engineering, of the State Department of Public Health. Personnel of these agencies participated in the sampling and field analysis functions.

Department of Public Works, City of San Jose. Staff members collected samples, made velocity traverse soundings, and transported supplies and provisions from San Jose.

traverses were made at five points of the cross section at Station 1 and at two or more tidal stages. For this work, which was undertaken by City of San Jose employees, the velocity drag was supported from a short boom mounted in the bow of a skiff. Velocities thus determined, together with corresponding tidal stages, are presented graphically in Figure 7. Discrepancies between bottom soundings made by sonar and by the drag may be largely due to the extremely soft mud on the creek bottom.

AERIAL PHOTOGRAPHS

An aerial mosaic of the area covered by the survey, flown November 7, 1953, along with oblique views especially taken for the survey, have been supplied by the Photographic Laboratory, U.S. Naval Air Station, Moffett Field. The mosaic is of particular value in delineating the water area subject to tidal influence at the time of the survey. The continued construction of salt pond levees, including the closing of Gray Goose Slough between the second and third periods of this survey, results in significant reduction of the tidal prism.

RESULTS OF SURVEY

Scheduling of the five sampling periods was planned so as to observe conditions before, during, and after the canning season. High rates of activity in the food processing industry occur during the months of July, August, September and October, while the peak rate occurs in September. Sampling period 3, which took place on September 15 and 16, coincided with the peak activity.

It will be seen from the tabular summaries for the five sampling periods that, for all periods, the greatest number of samples was taken from the inshore reaches of Coyote Creek. This may be considered the critical section of the creek, for it is here that a transition may be seen between the gross pollution further upstream and the lesser degree of pollution offshore. The transition is particularly apparent for the September sampling period, at which time food processing activity reaches its peak.

Sampling Period - July 7 and 8

This period occurred just prior to the beginning of the canning

season. Sampling activity concentrated on the inshore and upstream reaches, for, while there was a noticeable depletion of dissolved oxygen in the offshore area, particularly during low-low tide, the barrier, or front, of gross pollution did not advance downstream from the upstream reaches. Spot checks for sulfide were made on upstream samples having low dissolved oxygen, but none was found.

Sampling Period No. 2 - August 18 and 19

The pollutational effects of heavy canning activity were manifest in the advance of a front of gross pollution below the drawbridge, the presence of which was clearly visible to observers in the field and is illustrated by the variations in dissolved oxygen and sulfides at sampling stations 1, 2, 7, 8, 9, and 11. Sampling activity in the offshore region was stepped up during this period. Coyote Creek upstream from stations 9 and 11 was uniformly grossly polluted, devoid of dissolved oxygen and producing sulfide at a relatively high rate.

Sampling Period No. 3 - September 15 and 16

Bearing in mind conditions obtaining in Coyote Creek during sampling period 2, sampling activity in period 3 was increased in offshore reaches and markedly reduced in the upstream reaches. During this period the front of gross pollution remained in the region of stations 2, 3, 6 and 7, and was, in addition, evident in Alviso Slough.

Sampling Period No. 4 - October 22 and 23.

By the end of October food processing activity had very nearly ended and Coyote Creek had returned to conditions not dissimilar to those which obtained during the initial sampling period. The number of sampling runs was reduced generally, but sampling of the upstream stretch was stepped up from the schedule for the previous period. While the pollutational load of sewage from the City of San Jose outfall sewer produced significant depletion of dissolved oxygen in Coyote Creek, particularly at low-low tide, negative results for sulfide were obtained for all samples low in dissolved oxygen.

Sampling Period No. 5 - December 2 and 3

Sampling activity generally was further reduced for this period. In the offshore region, where conditions showed a considerable degree of recovery

SAMPLED 2
SAMPLING PERIOD NO. 1
July 7 and 8, 1953

Sampling Station No. 1

Time	D.O., Ppm			E.O.3, Ppm			Chloride, ppm			T, °C		
	Surface	Deep	1-Day	5-Day	Surface	Deep	15,000	15,300	15,600	11:30	13:33	14:55
11	2	3	4	5	6	7	15,300	15,600	15,900	11:30	13:33	14:55
1225	3.6	4.2	-0.3	0.2	-1.3	-2.6	15,000	15,300	15,600	11:30	13:33	14:55
1230	3.0	2.6	2.6	2.6	2.6	2.6	14,700	14,550	14,400	11:30	13:35	14:50
1235	2.5	2.2	2.6	2.6	2.4	2.4	14,700	14,550	14,400	11:30	13:35	14:50
1240	2.3	2.3	2.6	2.6	2.4	2.4	14,700	14,550	14,400	11:30	13:35	14:50
1245	1.8	1.8	2.6	2.6	2.0	2.0	14,700	14,550	14,400	11:30	13:35	14:50
1250	1.5	1.5	2.6	2.6	1.7	1.7	14,700	14,550	14,400	11:30	13:35	14:50
1255	1.5	1.5	2.6	2.6	1.7	1.7	14,700	14,550	14,400	11:30	13:35	14:50
1300	1.9	1.9	2.6	2.6	1.8	1.8	14,700	14,550	14,400	11:30	13:35	14:50
1305	1.9	1.9	2.6	2.6	1.8	1.8	14,700	14,550	14,400	11:30	13:35	14:50
1310	1.9	1.9	2.6	2.6	1.8	1.8	14,700	14,550	14,400	11:30	13:35	14:50
1315	1.9	1.9	2.6	2.6	1.8	1.8	14,700	14,550	14,400	11:30	13:35	14:50
1320	1.9	1.9	2.6	2.6	1.8	1.8	14,700	14,550	14,400	11:30	13:35	14:50
1325	1.9	1.9	2.6	2.6	1.8	1.8	14,700	14,550	14,400	11:30	13:35	14:50
1330	1.9	1.9	2.6	2.6	1.8	1.8	14,700	14,550	14,400	11:30	13:35	14:50

Remarks

Special sample incubated in dark.

Special sample incubated in light.

Water temperature 72 to 73°F.

Sampling Station No. 2

Time	D.O., Ppm			E.O.3, Ppm			Chloride, ppm			T, °C		
	1	2	3	4	5	6	7	8	9	10	11	12
11	2.3	2.3	2.3	2.3	2.3	2.3	14,950	15,150	15,300	11:30	13:30	14:30
1225	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1230	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1235	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1240	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1245	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1250	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1255	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1300	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1305	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1310	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1315	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1320	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1325	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1330	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30

Time	D.O., Ppm			E.O.3, Ppm			Chloride, ppm			T, °C		
	1	2	3	4	5	6	7	8	9	10	11	12
11	2	3	4	5	6	7	14,950	15,150	15,300	11:30	13:30	14:30
1225	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1230	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1235	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1240	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1245	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1250	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1255	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1300	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1305	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1310	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1315	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1320	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1325	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1330	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30

Time	D.O., Ppm			E.O.3, Ppm			Chloride, ppm			T, °C		
	1	2	3	4	5	6	7	8	9	10	11	12
11	2	3	4	5	6	7	14,950	15,150	15,300	11:30	13:30	14:30
1225	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1230	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1235	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1240	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1245	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1250	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1255	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1300	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1305	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1310	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1315	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1320	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1325	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1330	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30

Time	D.O., Ppm			E.O.3, Ppm			Chloride, ppm			T, °C		
	1	2	3	4	5	6	7	8	9	10	11	12
11	2	3	4	5	6	7	14,950	15,150	15,300	11:30	13:30	14:30
1225	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1230	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,150	15,300	11:30	13:30	14:30
1235	1.5	1.5	1.5	1.5	1.5	1.5	14,950	15,15				

Water Conditions in Lower San Francisco Bay

71

Sampling Station No. 5

Tensile Index	D.O., ppm			E.D.S., ppm			Chloride, ppm			D.L. Coli.			E.C. Coli.			D.O., ppm			E.D.S., ppm			Chloride, ppm			D.L. Coli.				
	Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day	
1150	5.5	5.5	1.5	1.5	1200	4.0	4.0	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1155	6.1	6.1	6.1	6.1	1225	4.5	4.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1160	6.6	6.6	6.6	6.6	1250	4.9	4.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1165	7.1	7.1	7.1	7.1	1275	5.3	5.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1170	7.6	7.6	7.6	7.6	1300	5.7	5.7	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1175	8.1	8.1	8.1	8.1	1325	6.1	6.1	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1180	8.6	8.6	8.6	8.6	1350	6.5	6.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1185	9.1	9.1	9.1	9.1	1375	6.9	6.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1190	9.6	9.6	9.6	9.6	1400	7.3	7.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1195	10.1	10.1	10.1	10.1	1425	7.7	7.7	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1200	10.6	10.6	10.6	10.6	1450	8.1	8.1	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1210	11.1	11.1	11.1	11.1	1475	8.5	8.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1220	11.6	11.6	11.6	11.6	1500	8.9	8.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1230	12.1	12.1	12.1	12.1	1525	9.3	9.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1240	12.6	12.6	12.6	12.6	1550	9.7	9.7	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1250	13.1	13.1	13.1	13.1	1575	10.1	10.1	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1260	13.6	13.6	13.6	13.6	1600	10.5	10.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1270	14.1	14.1	14.1	14.1	1625	10.9	10.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1280	14.6	14.6	14.6	14.6	1650	11.3	11.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1290	15.1	15.1	15.1	15.1	1675	11.7	11.7	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1300	15.6	15.6	15.6	15.6	1700	12.1	12.1	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1310	16.1	16.1	16.1	16.1	1725	12.5	12.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1320	16.6	16.6	16.6	16.6	1750	12.9	12.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1330	17.1	17.1	17.1	17.1	1775	13.3	13.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1340	17.6	17.6	17.6	17.6	1800	13.7	13.7	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1350	18.1	18.1	18.1	18.1	1825	14.1	14.1	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1360	18.6	18.6	18.6	18.6	1850	14.5	14.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1370	19.1	19.1	19.1	19.1	1875	14.9	14.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1380	19.6	19.6	19.6	19.6	1900	15.3	15.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1390	20.1	20.1	20.1	20.1	1925	15.7	15.7	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1400	20.6	20.6	20.6	20.6	1950	16.1	16.1	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1410	21.1	21.1	21.1	21.1	1975	16.5	16.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1420	21.6	21.6	21.6	21.6	2000	16.9	16.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1430	22.1	22.1	22.1	22.1	2025	17.3	17.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1440	22.6	22.6	22.6	22.6	2050	17.7	17.7	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1450	23.1	23.1	23.1	23.1	2075	18.1	18.1	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1460	23.6	23.6	23.6	23.6	2100	18.5	18.5	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1470	24.1	24.1	24.1	24.1	2125	18.9	18.9	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1480	24.6	24.6	24.6	24.6	2150	19.3	19.3	15.150	11.850	11.850	1.2	1.2	0.6	0.6	-3.6	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
1490	25.1	25.1	25.1	25.1	2175	19.7	19.7	15.150	11.850</																				

TABLE 2-3
SAMPLING POSITION NO. 2,
July 7 and 8, 1953

Sampling Station No. 9										Sampling Station No. 11										Sampling Station No. 12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Line	D.O., ppm			S.C.P., ppm			Chloride, ppm			B. coli Index, per ml.			Tides	D.O., ppm			S.C.P., ppm			Chloride, ppm			B.C.H. Index, per ml.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	Surface	Deep	1-Day	5-Day	Surface	Deep	Surface	Deep	1-Day	5-Day	Surface	Deep		Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day	Surface	Deep	1-Day	5-Day																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1101	1.6	1.9	2.1	2.3	14,700	15,000								11,400	11,500	1320	1427	1520	1627	1720	1827	1920	2020	2120	2220	2320	2420	2520	2620	2720	2820	2920	3020	3120	3220	3320	3420	3520	3620	3720	3820	3920	4020	4120	4220	4320	4420	4520	4620	4720	4820	4920	5020	5120	5220	5320	5420	5520	5620	5720	5820	5920	6020	6120	6220	6320	6420	6520	6620	6720	6820	6920	7020	7120	7220	7320	7420	7520	7620	7720	7820	7920	8020	8120	8220	8320	8420	8520	8620	8720	8820	8920	9020	9120	9220	9320	9420	9520	9620	9720	9820	9920	10020	10120	10220	10320	10420	10520	10620	10720	10820	10920	11020	11120	11220	11320	11420	11520	11620	11720	11820	11920	12020	12120	12220	12320	12420	12520	12620	12720	12820	12920	13020	13120	13220	13320	13420	13520	13620	13720	13820	13920	14020	14120	14220	14320	14420	14520	14620	14720	14820	14920	15020	15120	15220	15320	15420	15520	15620	15720	15820	15920	16020	16120	16220	16320	16420	16520	16620	16720	16820	16920	17020	17120	17220	17320	17420	17520	17620	17720	17820	17920	18020	18120	18220	18320	18420	18520	18620	18720	18820	18920	19020	19120	19220	19320	19420	19520	19620	19720	19820	19920	20020	20120	20220	20320	20420	20520	20620	20720	20820	20920	21020	21120	21220	21320	21420	21520	21620	21720	21820	21920	22020	22120	22220	22320	22420	22520	22620	22720	22820	22920	23020	23120	23220	23320	23420	23520	23620	23720	23820	23920	24020	24120	24220	24320	24420	24520	24620	24720	24820	24920	25020	25120	25220	25320	25420	25520	25620	25720	25820	25920	26020	26120	26220	26320	26420	26520	26620	26720	26820	26920	27020	27120	27220	27320	27420	27520	27620	27720	27820	27920	28020	28120	28220	28320	28420	28520	28620	28720	28820	28920	29020	29120	29220	29320	29420	29520	29620	29720	29820	29920	30020	30120	30220	30320	30420	30520	30620	30720	30820	30920	31020	31120	31220	31320	31420	31520	31620	31720	31820	31920	32020	32120	32220	32320	32420	32520	32620	32720	32820	32920	33020	33120	33220	33320	33420	33520	33620	33720	33820	33920	34020	34120	34220	34320	34420	34520	34620	34720	34820	34920	35020	35120	35220	35320	35420	35520	35620	35720	35820	35920	36020	36120	36220	36320	36420	36520	36620	36720	36820	36920	37020	37120	37220	37320	37420	37520	37620	37720	37820	37920	38020	38120	38220	38320	38420	38520	38620	38720	38820	38920	39020	39120	39220	39320	39420	39520	39620	39720	39820	39920	40020	40120	40220	40320	40420	40520	40620	40720	40820	40920	41020	41120	41220	41320	41420	41520	41620	41720	41820	41920	42020	42120	42220	42320	42420	42520	42620	42720	42820	42920	43020	43120	43220	43320	43420	43520	43620	43720	43820	43920	44020	44120	44220	44320	44420	44520	44620	44720	44820	44920	45020	45120	45220	45320	45420	45520	45620	45720	45820	45920	46020	46120	46220	46320	46420	46520	46620	46720	46820	46920	47020	47120	47220	47320	47420	47520	47620	47720	47820	47920	48020	48120	48220	48320	48420	48520	48620	48720	48820	48920	49020	49120	49220	49320	49420	49520	49620	49720	49820	49920	50020	50120	50220	50320	50420	50520	50620	50720	50820	50920	51020	51120	51220	51320	51420	51520	51620	51720	51820	51920	52020	52120	52220	52320	52420	52520	52620	52720	52820	52920	53020	53120	53220	53320	53420	53520	53620	53720	53820	53920	54020	54120	54220	54320	54420	54520	54620	54720	54820	54920	55020	55120	55220	55320	55420	55520	55620	55720	55820	55920	56020	56120	56220	56320	56420	56520	56620	56720	56820	56920	57020	57120	57220	57320	57420	57520	57620	57720	57820	57920	58020	58120	58220	58320	58420	58520	58620	58720	58820	58920	59020	59120	59220	59320	59420	59520	59620	59720	59820	59920	60020	60120	60220	60320	60420	60520	60620	60720	60820	60920	61020	61120	61220	61320	61420	61520	61620	61720	61820	61920	62020	62120	62220	62320	62420	62520	62620	62720	62820	62920	63020	63120	63220	63320	63420	63520	63620	63720	63820	63920	64020	64120	64220	64320	64420	64520	64620	64720	64820	64920	65020	65120	65220	65320	65420	65520	65620	65720	65820	65920	66020	66120	66220	66320	66420	66520	66620	66720	66820	66920	67020	67120	67220	67320	67420	67520	67620	67720	67820	67920	68020	68120	68220	68320	68420	68520	68620	68720	68820	68920	69020	69120	69220	69320	69420	69520	69620	69720	69820	69920	70020	70120	70220	70320	70420	70520	70620	70720	70820	70920	71020	71120	71220	71320	71420	71520	71620	71720	71820	71920	72020	72120	72220	72320	72420	72520	72620	72720	72820	72920	73020	73120	73220	73320	73420	73520	73620	73720	73820	73920	74020	74120	74220	74320	74420	74520	74620	74720	74820	74920	75020	75120	75220	75320	75420	75520	75620	75720	75820	75920	76020	76120	76220	76320	76420	76520	76620	76720	76820	76920	77020	77120	77220	77320	77420	77520	77620	77720	77820	77920	78020	78120	78220	78320	78420	78520	78620	78720	78820	78920	79020	79120	79220	79320	79420	79520	79620	79720	79820	79920	80020	80120	80220	80320	80420	80520	80620	80720	80820	80920	81020	81120	81220	81320	81420	81520	81620	81720	81820	81920	82020	82120	82220	82320	82420	82520	82620	82720	82820	82920	83020	83120	83220	83320	83420	83520	83620	83720	83820	83920	84020	84120	84220	84320	84420	84520	84620	84720	84820	84920	85020	85120	85220	85320	85420	85520	85620	85720	85820	85920	86020	86120	86220	86320	86420	86520	86620	86720	86820	86920	87020	87120	87220	87320	87420	87520	87620	87720	87820	87920	88020	88120	88220	88320	88420	88520	88620	88720	88820	88920	89020	89120	89220	89320	89420	89520	89620	89720	89820	89920	90020	90120	90220	90320	90420	90520	90620	90720	90820	90920	91020	91120	91220	91320	91420	91520	91620	91720	91820	91920	92020	92120	92220	92320	92420	92520	92620	92720	92820	92920	93020	93120	93220	93320	93420	93520	93620	93720	93820	93920	94020	94120	94220	94320	94420	94520	94620	94720	94820	94920	95020	95120	95220	95320	95420	95520	95620	95720	95820	95920	96020	96120	96220	96320	96420	96520	96620	96720	96820	96920	97020	97120	97220	97320	97420	97520	97620	97720	97820	97920	98020	98120	98220	98320	98420	98520	98620	98720	98820	98920	99020	99120	99220	99320	99420	99520	99620	99720	99820	99920	100020	100120	100220	100320	100420	100520	100620	100720	100820

Water Conditions in Lower San Francisco Bay

36

TABLE 25
CULTIVATED PLANTES

Water Conditions in Lower San Francisco Bay

37

GARDENERS' SCAFFOLDING No. 17

September 2nd. 1

Gentling Section No. 16

Water Conditions in Lower San Francisco Bay

SAMPLES PRINTED NO. 2
August 18 and 19, 1959

Sampling Station No. 1										Sampling Station No. 2									
Index Year	B.O.D., Ppm	B.O.D., Ppm	5-Day Surface	5-Day Surfaces, ppm	5-Day Surfaces, ppm	5-Day Deep	5-Day Deep	5-Day Surface	5-Day Surfaces, ppm	5-Day Deep	5-Day Deep	5-Day Surface	5-Day Surfaces, ppm	5-Day Deep	5-Day Deep	5-Day Surface	5-Day Surfaces, ppm	5-Day Deep	5-Day Deep
1935	0.0	0.0	5.2	5.2	22.6	22.6	-0.2	2.2	31.2	31.2	0.3	0.3	1.5	1.5	0.0	0.0	0.0	0.0	0.0
1936	1.2	2	5.3	5.3	4.2	4.2	0.2	0.2	1.2	1.2	0.3	0.3	1.5	1.5	0.0	0.0	0.0	0.0	0.0
1937	1.3	3	5.4	5.4	4.3	4.3	0.3	0.3	1.3	1.3	0.4	0.4	1.6	1.6	0.0	0.0	0.0	0.0	0.0
1938	1.5	4	5.5	5.5	4.4	4.4	0.4	0.4	1.4	1.4	0.5	0.5	1.7	1.7	0.0	0.0	0.0	0.0	0.0
1939	1.6	5	5.6	5.6	4.5	4.5	0.5	0.5	1.5	1.5	0.6	0.6	1.8	1.8	0.0	0.0	0.0	0.0	0.0
1940	1.7	6	5.7	5.7	4.6	4.6	0.6	0.6	1.6	1.6	0.7	0.7	1.9	1.9	0.0	0.0	0.0	0.0	0.0
1941	1.8	7	5.8	5.8	4.7	4.7	0.7	0.7	1.7	1.7	0.8	0.8	2.0	2.0	0.0	0.0	0.0	0.0	0.0
1942	1.9	8	5.9	5.9	4.8	4.8	0.8	0.8	1.8	1.8	0.9	0.9	2.1	2.1	0.0	0.0	0.0	0.0	0.0
1943	2.0	9	6.0	6.0	4.9	4.9	0.9	0.9	1.9	1.9	1.0	1.0	2.2	2.2	0.0	0.0	0.0	0.0	0.0
1944	2.1	10	6.1	6.1	5.0	5.0	1.0	1.0	2.0	2.0	1.1	1.1	2.3	2.3	0.0	0.0	0.0	0.0	0.0
1945	2.2	11	6.2	6.2	5.1	5.1	1.1	1.1	2.1	2.1	1.2	1.2	2.4	2.4	0.0	0.0	0.0	0.0	0.0
1946	2.3	12	6.3	6.3	5.2	5.2	1.2	1.2	2.2	2.2	1.3	1.3	2.5	2.5	0.0	0.0	0.0	0.0	0.0
1947	2.4	13	6.4	6.4	5.3	5.3	1.3	1.3	2.3	2.3	1.4	1.4	2.6	2.6	0.0	0.0	0.0	0.0	0.0
1948	2.5	14	6.5	6.5	5.4	5.4	1.4	1.4	2.4	2.4	1.5	1.5	2.7	2.7	0.0	0.0	0.0	0.0	0.0
1949	2.6	15	6.6	6.6	5.5	5.5	1.5	1.5	2.5	2.5	1.6	1.6	2.8	2.8	0.0	0.0	0.0	0.0	0.0
1950	2.7	16	6.7	6.7	5.6	5.6	1.6	1.6	2.6	2.6	1.7	1.7	2.9	2.9	0.0	0.0	0.0	0.0	0.0
1951	2.8	17	6.8	6.8	5.7	5.7	1.7	1.7	2.7	2.7	1.8	1.8	3.0	3.0	0.0	0.0	0.0	0.0	0.0
1952	2.9	18	6.9	6.9	5.8	5.8	1.8	1.8	2.8	2.8	1.9	1.9	3.1	3.1	0.0	0.0	0.0	0.0	0.0
1953	3.0	19	7.0	7.0	5.9	5.9	1.9	1.9	2.9	2.9	2.0	2.0	3.2	3.2	0.0	0.0	0.0	0.0	0.0
1954	3.1	20	7.1	7.1	6.0	6.0	2.0	2.0	3.0	3.0	2.1	2.1	3.3	3.3	0.0	0.0	0.0	0.0	0.0
1955	3.2	21	7.2	7.2	6.1	6.1	2.1	2.1	3.1	3.1	2.2	2.2	3.4	3.4	0.0	0.0	0.0	0.0	0.0
1956	3.3	22	7.3	7.3	6.2	6.2	2.2	2.2	3.2	3.2	2.3	2.3	3.5	3.5	0.0	0.0	0.0	0.0	0.0
1957	3.4	23	7.4	7.4	6.3	6.3	2.3	2.3	3.3	3.3	2.4	2.4	3.6	3.6	0.0	0.0	0.0	0.0	0.0
1958	3.5	24	7.5	7.5	6.4	6.4	2.4	2.4	3.4	3.4	2.5	2.5	3.7	3.7	0.0	0.0	0.0	0.0	0.0
1959	3.6	25	7.6	7.6	6.5	6.5	2.5	2.5	3.5	3.5	2.6	2.6	3.8	3.8	0.0	0.0	0.0	0.0	0.0
1960	3.7	26	7.7	7.7	6.6	6.6	2.6	2.6	3.6	3.6	2.7	2.7	3.9	3.9	0.0	0.0	0.0	0.0	0.0
1961	3.8	27	7.8	7.8	6.7	6.7	2.7	2.7	3.7	3.7	2.8	2.8	4.0	4.0	0.0	0.0	0.0	0.0	0.0
1962	3.9	28	7.9	7.9	6.8	6.8	2.8	2.8	3.8	3.8	2.9	2.9	4.1	4.1	0.0	0.0	0.0	0.0	0.0
1963	4.0	29	8.0	8.0	6.9	6.9	2.9	2.9	3.9	3.9	3.0	3.0	4.2	4.2	0.0	0.0	0.0	0.0	0.0
1964	4.1	30	8.1	8.1	7.0	7.0	3.0	3.0	4.0	4.0	3.1	3.1	4.3	4.3	0.0	0.0	0.0	0.0	0.0
1965	4.2	31	8.2	8.2	7.1	7.1	3.1	3.1	4.1	4.1	3.2	3.2	4.4	4.4	0.0	0.0	0.0	0.0	0.0
1966	4.3	32	8.3	8.3	7.2	7.2	3.2	3.2	4.2	4.2	3.3	3.3	4.5	4.5	0.0	0.0	0.0	0.0	0.0
1967	4.4	33	8.4	8.4	7.3	7.3	3.3	3.3	4.3	4.3	3.4	3.4	4.6	4.6	0.0	0.0	0.0	0.0	0.0
1968	4.5	34	8.5	8.5	7.4	7.4	3.4	3.4	4.4	4.4	3.5	3.5	4.7	4.7	0.0	0.0	0.0	0.0	0.0
1969	4.6	35	8.6	8.6	7.5	7.5	3.5	3.5	4.5	4.5	3.6	3.6	4.8	4.8	0.0	0.0	0.0	0.0	0.0
1970	4.7	36	8.7	8.7	7.6	7.6	3.6	3.6	4.6	4.6	3.7	3.7	4.9	4.9	0.0	0.0	0.0	0.0	0.0
1971	4.8	37	8.8	8.8	7.7	7.7	3.7	3.7	4.7	4.7	3.8	3.8	5.0	5.0	0.0	0.0	0.0	0.0	0.0
1972	4.9	38	8.9	8.9	7.8	7.8	3.8	3.8	4.8	4.8	3.9	3.9	5.1	5.1	0.0	0.0	0.0	0.0	0.0
1973	5.0	39	9.0	9.0	7.9	7.9	3.9	3.9	4.9	4.9	4.0	4.0	5.2	5.2	0.0	0.0	0.0	0.0	0.0
1974	5.1	40	9.1	9.1	8.0	8.0	4.0	4.0	5.0	5.0	4.1	4.1	5.3	5.3	0.0	0.0	0.0	0.0	0.0
1975	5.2	41	9.2	9.2	8.1	8.1	4.1	4.1	5.1	5.1	4.2	4.2	5.4	5.4	0.0	0.0	0.0	0.0	0.0
1976	5.3	42	9.3	9.3	8.2	8.2	4.2	4.2	5.2	5.2	4.3	4.3	5.5	5.5	0.0	0.0	0.0	0.0	0.0
1977	5.4	43	9.4	9.4	8.3	8.3	4.3	4.3	5.3	5.3	4.4	4.4	5.6	5.6	0.0	0.0	0.0	0.0	0.0
1978	5.5	44	9.5	9.5	8.4	8.4	4.4	4.4	5.4	5.4	4.5	4.5	5.7	5.7	0.0	0.0	0.0	0.0	0.0
1979	5.6	45	9.6	9.6	8.5	8.5	4.5	4.5	5.5	5.5	4.6	4.6	5.8	5.8	0.0	0.0	0.0	0.0	0.0
1980	5.7	46	9.7	9.7	8.6	8.6	4.6	4.6	5.6	5.6	4.7	4.7	5.9	5.9	0.0	0.0	0.0	0.0	0.0
1981	5.8	47	9.8	9.8	8.7	8.7	4.7	4.7	5.7	5.7	4.8	4.8	6.0	6.0	0.0	0.0	0.0	0.0	0.0
1982	5.9	48	9.9	9.9	8.8	8.8	4.8	4.8	5.8	5.8	4.9	4.9	6.1	6.1	0.0	0.0	0.0	0.0	0.0
1983	6.0	49	10.0	10.0	8.9	8.9	4.9	4.9	5.9	5.9	5.0	5.0	6.2	6.2	0.0	0.0	0.0	0.0	0.0
1984	6.1	50	10.1	10.1	9.0	9.0	5.0	5.0	6.0	6.0	5.1	5.1	6.3	6.3	0.0	0.0	0.0	0.0	0.0
1985	6.2	51	10.2	10.2	9.1	9.1	5.1	5.1	6.1	6.1	5.2	5.2	6.4	6.4	0.0	0.0	0.0	0.0	0.0
1986	6.3	52	10.3	10.3	9.2	9.2	5.2	5.2	6.2	6.2	5.3	5.3	6.5	6.5	0.0	0.0	0.0	0.0	0.0
1987	6.4	53	10.4	10.4	9.3	9.3	5.3	5.3	6.3	6.3	5.4	5.4	6.6	6.6	0.0	0.0	0.0	0.0	0.0
1988	6.5	54	10.5	10.5	9.4	9.4	5.4	5.4	6.4	6.4	5.5	5.5	6.7	6.7	0.0	0.0	0.0	0.0	0.0
1989	6.6	55	10.6	10.6	9.5	9.5	5.5	5.5	6.5	6.5	5.6	5.6	6.8	6.8	0.0	0.0	0.0	0.0	0.0
1990	6.7	56	10.7	10.7	9.6	9.6	5.6	5.6	6.6	6.6	5.7	5.7	6.9	6.9	0.0	0.0	0.0	0.0	0.0
1991	6.8	57	10.8	10.8	9.7	9.7	5.7	5.7	6.7	6.7	5.8	5.8	7.0	7.0	0.0	0.0	0.0	0.0	0.0
1992	6.9	58	10.9	10.9	9.8	9.8	5.8	5.8	6.8	6.8	5.9	5.9	7.1	7.1	0.0	0.0	0.0	0.0	0.0
1993	7.0	59	11.0	11.0	9.9	9.9	5.9	5.9	6.9	6.9	6.0	6.0	7.2	7.2	0.0	0.0	0.0	0.0	0.0
1994	7.1	60	11.1	11.1	10.0	10.0	6.0	6.0	7.0	7.0	6.1	6.1	7.3	7.3	0.0	0.0	0.0	0.0	0.0
1995	7.2	61	11.2	11.2	10.1	10.1	6.1	6.1	7.1	7.1	6.2	6.2	7.4	7.4	0.0	0.0	0.0	0.0	0.0
1996	7.3	62	11.3	11.3	10.2	10.2	6.2	6.2	7.2	7.2	6.3	6.3	7.5	7.5	0.0	0.0	0.0	0.0	0.0
1997	7.4	63	11.4	11.4	10.3	10.3	6.3	6.3	7.3	7.3	6.4	6.4	7.6	7.6	0.0	0.0	0.0	0.0	0.0
1998	7.5	64	11.5	11.5	10.4	10.4	6.4	6.4	7.4	7.4	6.5	6.5	7.7	7.7	0.0	0.0	0.0	0.0	0.0
1999	7.6	65	11.6	11.6	10.5	10.5	6.5	6.5	7.5	7.5	6.6	6.6	7.8	7.8	0.0	0.0	0.0	0.0	0.0
2000	7.7	66	11.7	11.7	10.6	10.6	6.6	6.6	7.6	7.6	6.7	6.7	7.9	7.9	0.0	0.0	0.0	0.0	0.0
2001	7.8	67	11.8	11.8	10.7	10.7	6.7	6.7	7.7	7.7	6.8	6.8	8.0	8.0	0.0	0.0	0.0	0.0	0.0
2002	7.9	68	11.9	11.9	10.8	10.8	6.8	6.8	7.8	7.8	6.9	6.9	8.1	8.1	0.0	0.0	0.0	0.0	0.0
2003	8.0	69	12.0	12.0	10.9	10.9	6.9	6.9	7.9	7.9	7.0	7.0	8.2	8.2	0.0	0.0	0.0	0.0	0.0
2004	8.1	70	12.1	12.1	11.0	11.0	7.0	7.0	8.0	8.0	7.1	7.1	8.3						

PRINTING RECORD NO. 2
August 18 and 19, 1953

Water Conditions in Lower San Francisco Bay

39

Sampling Station No.

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Sealing Station No. 24

A species sample incubated in light.

Densest sample concentrated in centre

Environ Monit Assess (2009) 151:1–10

SUMMIT POINT NO. 2
ELEVATION 3-8
August 18 and 19, 1957

SEARCHED 3-6
SERIALIZED 18 MAR 1953
INDEXED 18 MAR 1953
FILED 18 MAR 1953

Water Conditions in Lower San Francisco Bay

22

TABLE 3-9
SAMPLING RECORD NO. 2
August 18 and 19, 1933

Time	Sampling Station No. 13						Sampling Station No. 14					
	D.O., mg.	B.O.D., mg.	B.O.D., mg.	Sulfide, pps	B. Coli Index, per ml.	Time	D.O., mg.	B.O.D., mg.	B.O.D., mg.	Sulfide, pps	B. Coli Index, per ml.	
	Surf.	Deep	1-Day	5-Day	Surf.	Surf.	Deep	2-Day	5-Day	Surf.	Deep	
1	2	3	4	5	6	7	5	1	2	3	4	5
1615	0.0	0.0	16.2	212.0	8.0	5.0	1	1030	9.0	5.0	5.0	6
1100					9.0	6.0		1050		9.0		
1140					8.0	5.0		1135		7.0		
1205					7.0	5.0		1300		5.0		
1325					6.0	5.0		1350		6.0		
1120					6.0	6.0		1115		5.0		
1530					6.0	5.0		1630		5.0		
1720					20.4	27.4		1725		5.0		
1910	0.0	0.0				2.5		1925		5.0		
2000					5.0			2115		5.0		
2210					5.0	3.0		2320		5.0		
2330					7.0	7.0		0030		9.0		
0035					10.0	9.0		0130		7.5		
0110					8.0	9.0		0325		6.0		
0325					6.0	9.0		0545		7.0		
0530					7.0	1000*		0745		9.0		
0730					10.0	8.0		0940		10.0		
0830					6.0	9.0		0930		9.0		
0940					6.0	7.0		1040		5.0		
1030					5.5	5.0		1130		6.0		
1120					5.0	5.0		1000*		6.0		

Sampling Station No. 15									
Time	1-D. sec.	1-mm	5-D. sec.	1-mm	5-Day	1-Day	5-Day	Surface	Bottom
1035	0930	0.0	1155	1147				9.0	9.0
1045	1035	0.0	1155	1147				8.5	8.5
1055	1045	0.0	1155	1147				8.0	8.0
1105	1055	0.0	1155	1147				7.5	7.5
1115	1105	0.0	1155	1147				7.0	7.0
1125	1115	0.0	1155	1147				6.5	6.5
1135	1125	0.0	1155	1147				6.0	6.0
1145	1135	0.0	1155	1147				5.5	5.5
1155	1145	0.0	1155	1147				5.0	5.0
1155	1155	0.0	1155	1147				4.5	4.5
1155	1155	0.0	1155	1147				4.0	4.0
1155	1155	0.0	1155	1147				3.5	3.5
1155	1155	0.0	1155	1147				3.0	3.0
1155	1155	0.0	1155	1147				2.5	2.5
1155	1155	0.0	1155	1147				2.0	2.0
1155	1155	0.0	1155	1147				1.5	1.5
1155	1155	0.0	1155	1147				1.0	1.0
1155	1155	0.0	1155	1147				0.5	0.5
1155	1155	0.0	1155	1147				0.0	0.0
Sampling Station No. 16									
Time	1-D. sec.	1-mm	5-D. sec.	1-mm	5-Day	1-Day	5-Day	Surface	Bottom
1205	1155	0.0	1205	1155				9.0	9.0
1215	1205	0.0	1205	1155				8.5	8.5
1225	1215	0.0	1205	1155				8.0	8.0
1235	1225	0.0	1205	1155				7.5	7.5
1245	1235	0.0	1205	1155				7.0	7.0
1255	1245	0.0	1205	1155				6.5	6.5
1255	1255	0.0	1205	1155				6.0	6.0
1255	1255	0.0	1205	1155				5.5	5.5
1255	1255	0.0	1205	1155				5.0	5.0
1255	1255	0.0	1205	1155				4.5	4.5
1255	1255	0.0	1205	1155				4.0	4.0
1255	1255	0.0	1205	1155				3.5	3.5
1255	1255	0.0	1205	1155				3.0	3.0
1255	1255	0.0	1205	1155				2.5	2.5
1255	1255	0.0	1205	1155				2.0	2.0
1255	1255	0.0	1205	1155				1.5	1.5
1255	1255	0.0	1205	1155				1.0	1.0
1255	1255	0.0	1205	1155				0.5	0.5
1255	1255	0.0	1205	1155				0.0	0.0

TABLE 2-E
SAMPLED PERIODS
August 15 and 16, 1953

Water Conditions in Lower San Francisco Bay

TABLE 2-F
SUMMIT PERIOD NO. 2
August 19 and 20, 1952

Sampling Station No. 17										Sampling Station No. 19											
Time	D.S., ppm			E.D.D., ppm			Self-dis., ppm			E. Coli Index, per ml.			D.S., ppm			E.D.D., ppm			Self-dis., ppm		
	Surface	Deep	1-Day	5-Day	Surface	Deep	5-Day	Surface	Deep	5-Day	Surface	Deep	5-Day	Surface	Deep	5-Day	Surface	Deep	5-Day	Surface	Deep
0905	0.0	2	3	4	5	6	7	7.0	7.0	7.0	1005	0.0	0.0	11.0	11.0	11.0	8.0	8.0	8.0	9.0	9.0
1105					31.2	1.2	1.2	5.0	5.0	5.0	1120			6.0	6.0	6.0	4.0	4.0	4.0	5.0	5.0
1210								5.0	5.0	5.0	1130*			8.0	8.0	8.0	6.0	6.0	6.0	8.0	8.0
1335								3.0	3.0	3.0	1140			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
1530								6.4	6.4	6.4	1155			7.0	7.0	7.0	5.0	5.0	5.0	7.0	7.0
1730								4.0	4.0	4.0	1160*			6.0	6.0	6.0	4.0	4.0	4.0	5.0	5.0
2030					45.8	42.0	42.0	6.0	6.0	6.0	1160*			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
2130								9.0	9.0	9.0	2230			6.0	6.0	6.0	4.0	4.0	4.0	5.0	5.0
2350								6.0	6.0	6.0	2330*			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
0125								6.0	6.0	6.0	0110			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
0310								8.0	8.0	8.0	0320			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
0150								6.0	6.0	6.0	0330*			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
0615								12.2	12.2	12.2	0340*			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
1030								24.2	24.2	24.2	0350*			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0
1155								34.8	34.8	34.8	2230*			7.0	7.0	7.0	5.0	5.0	5.0	6.0	6.0

Sampling Station No. 19							
	1	2	3	4	5	6	7
1220				24.9		6.5	7.0
2130				23.4		1.0	3.5
0430				19.3		3.5	6.5
				0.0			
				0.0			

Water Conditions in Lower San Francisco Bay

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THE BIBLE IN ENGLISH.
BY DR. JAMES BURTON.

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* Ohlauer 74,700 lbs

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Water Conditions in Lower San Francisco Bay

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Chlorites - 16,300 ppm. Observed large amounts of chlorite, chlorophyll, mafic minerals, and fine-grained pyroxene.

the following - 16,250 pds

TABLE I-3
Sampling Period No. 3
September 15 and 16, 1953

Sampling Station No. 1c

Time	B.O., ppm	E.C.D., ppm	Salnide, ppm	E. Coli Index, per ml.	Time	B.O., ppm	E.C.D., ppm	Salnide, ppm	E. Coli Index, per ml.
Surface	Deep	1-Day	2-Day	Surface	Deep	Surface	Deep	1-Day	2-Day
1	2	3	4	5	6	7	8	9	10
0950	5.6	5.1	5.4	0.0					
1130	5.1	5.0	5.2						
1200									
1500									
1715									
2010									
2255									
0050									
0115									
0215									
0245									

Sampling Station No. 5a

Time	B.O., ppm	E.C.D., ppm	Salnide, ppm	E. Coli Index, per ml.	Time	B.O., ppm	E.C.D., ppm	Salnide, ppm	E. Coli Index, per ml.
Surface	Deep	1-Day	2-Day	Surface	Deep	1-Day	2-Day	Surface	Deep
1	2	3	4	5	6	7	8	9	10
0920	6.2	6.1	6.3	0.0					
1120	6.1	6.0	6.2						
1230									
1530									
1735									
2000									
2230									
0030									
0230									

Remarks: Chlorides = 16,300 ppm
Chlorides = 16,700 ppm, p3 = T, 7
Chlorides = 16,650 ppm
Chlorides = 15,900 ppm, T3 = 7, 7
Sulfurides = 16,350 ppm, T3 = 7, 7

figures

p3, 3 = present, -- sample lost during analysis

TABLE 4-C
SAMPLING PERIOD 30. 3
September 15 and 16, 1953

Sampling Station No. 7								Sampling Station No. 8							
Time	D.O., ppm	2,3-D., ppm	Surface	Sub-surf.	From	B. O.D. Index, per ml.	Time	H.O., ppm	Surface	Deep	L-Day	S-Day	Surf. Deep	Depth, fpm	P. O.D. Index, per ml.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0920															
1115															
1220 ^a															
1415 ^b															
1505 ^c	0.0	0.1	10.0	21.0	5.0	5.0	1300*								
1650 ^d	2.0	2.3	-	-	7.0	2.9	Trace	0.0	100	1110	1410	1500	1700	1700	1700
1920 ^e	2.0	2.3	0.1	-	2.7	0.0	0.0								
2035	0.0	0.0	0.0	0.0	-	-	-								
0145															
0230 ^f															
0420															
0615	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
0750	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
0920 ^g	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
1035															
Remarks: Sample lost								Sampling Station No. 9							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1030															
1140															
1550															
1630															
2200															
2300															
2345															
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9550															
9650															
9750															
9850															
9950															
10050															

Remarks

- ^a Chlorides - 15, 150 ppm
- ^b Chlorides - 16, 200 ppm
- ^c Chlorides - 16, 150 ppm
- ^d Chlorides - 15, 250 ppm, TH = 7.15
- ^e Chlorides - 16, 220 ppm. Observed large amount of flocculent amorphous matter and siltates and silicates

TABLE I-D

STARTED PERIOD 30, 3
September 15 and 16, 1953

Sampling Station No. 10

Time	D.O., ppm			B.O.D., ppm			Silicides, ppm			PFCs			S. Oct. Index, per cent.			
	Surface	Deep	1-Day	3-Day	Surface	Deep	1-Day	3-Day	Surface	Deep	1-Day	3-Day	Surface	Deep	1-Day	3-Day
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Total	-	-	-	-	9.0	10.0	9.0	8.0	4.0	5.0	7.0	11.0	13.0	11.0	10.0	12.0
0.955	1.55	2.05	2.25	2.35	1.95	2.25	2.05	1.95	1.55	1.75	2.0	2.8	2.5	2.2	2.5	2.8
0.925	1.60	2.25	2.35	2.40	1.95	2.25	2.05	1.95	1.55	1.75	2.0	2.8	2.5	2.2	2.5	2.8
0.900	1.65	2.30	2.40	2.45	2.00	2.30	2.10	2.00	1.55	1.75	2.0	2.8	2.5	2.2	2.5	2.8
0.875	1.70	2.35	2.45	2.50	2.05	2.35	2.15	2.05	1.60	1.80	2.0	2.8	2.5	2.2	2.5	2.8
0.850	1.75	2.40	2.50	2.55	2.10	2.40	2.20	2.10	1.65	1.85	2.0	2.8	2.5	2.2	2.5	2.8
0.825	1.80	2.45	2.55	2.60	2.15	2.45	2.25	2.15	1.70	1.90	2.0	2.8	2.5	2.2	2.5	2.8
0.800	1.85	2.50	2.60	2.65	2.20	2.50	2.30	2.20	1.75	1.95	2.0	2.8	2.5	2.2	2.5	2.8
0.775	1.90	2.55	2.65	2.70	2.25	2.55	2.35	2.25	1.80	2.00	2.0	2.8	2.5	2.2	2.5	2.8
0.750	1.95	2.60	2.70	2.75	2.30	2.60	2.40	2.30	1.85	2.05	2.0	2.8	2.5	2.2	2.5	2.8
0.725	2.00	2.65	2.75	2.80	2.35	2.65	2.45	2.35	1.90	2.10	2.0	2.8	2.5	2.2	2.5	2.8
0.700	2.05	2.70	2.80	2.85	2.40	2.70	2.50	2.40	1.95	2.15	2.0	2.8	2.5	2.2	2.5	2.8
0.675	2.10	2.75	2.85	2.90	2.45	2.75	2.55	2.45	2.00	2.20	2.0	2.8	2.5	2.2	2.5	2.8
0.650	2.15	2.80	2.90	2.95	2.50	2.80	2.60	2.50	2.05	2.25	2.0	2.8	2.5	2.2	2.5	2.8
0.625	2.20	2.85	2.95	3.00	2.55	2.85	2.65	2.55	2.10	2.30	2.0	2.8	2.5	2.2	2.5	2.8
0.600	2.25	2.90	3.00	3.05	2.60	2.90	2.70	2.60	2.15	2.35	2.0	2.8	2.5	2.2	2.5	2.8
0.575	2.30	2.95	3.05	3.10	2.65	2.95	2.75	2.65	2.20	2.40	2.0	2.8	2.5	2.2	2.5	2.8
0.550	2.35	3.00	3.10	3.15	2.70	3.00	2.80	2.70	2.25	2.45	2.0	2.8	2.5	2.2	2.5	2.8
0.525	2.40	3.05	3.15	3.20	2.75	3.05	2.85	2.75	2.30	2.50	2.0	2.8	2.5	2.2	2.5	2.8
0.500	2.45	3.10	3.20	3.25	2.80	3.10	2.90	2.80	2.35	2.55	2.0	2.8	2.5	2.2	2.5	2.8
0.475	2.50	3.15	3.25	3.30	2.85	3.15	2.95	2.85	2.40	2.60	2.0	2.8	2.5	2.2	2.5	2.8
0.450	2.55	3.20	3.30	3.35	2.90	3.20	3.00	2.90	2.45	2.65	2.0	2.8	2.5	2.2	2.5	2.8
0.425	2.60	3.25	3.35	3.40	2.95	3.25	3.05	2.95	2.50	2.70	2.0	2.8	2.5	2.2	2.5	2.8
0.400	2.65	3.30	3.40	3.45	3.00	3.30	3.10	3.00	2.55	2.75	2.0	2.8	2.5	2.2	2.5	2.8
0.375	2.70	3.35	3.45	3.50	3.05	3.35	3.15	3.05	2.60	2.80	2.0	2.8	2.5	2.2	2.5	2.8
0.350	2.75	3.40	3.50	3.55	3.10	3.40	3.20	3.10	2.65	2.85	2.0	2.8	2.5	2.2	2.5	2.8
0.325	2.80	3.45	3.55	3.60	3.15	3.45	3.25	3.15	2.70	2.90	2.0	2.8	2.5	2.2	2.5	2.8
0.300	2.85	3.50	3.60	3.65	3.20	3.50	3.30	3.20	2.75	2.95	2.0	2.8	2.5	2.2	2.5	2.8
0.275	2.90	3.55	3.65	3.70	3.25	3.55	3.35	3.25	2.80	3.00	2.0	2.8	2.5	2.2	2.5	2.8
0.250	2.95	3.60	3.70	3.75	3.30	3.60	3.40	3.30	2.85	3.05	2.0	2.8	2.5	2.2	2.5	2.8
0.225	3.00	3.65	3.75	3.80	3.35	3.65	3.45	3.35	2.90	3.10	2.0	2.8	2.5	2.2	2.5	2.8
0.200	3.05	3.70	3.80	3.85	3.40	3.70	3.50	3.40	2.95	3.15	2.0	2.8	2.5	2.2	2.5	2.8
0.175	3.10	3.75	3.85	3.90	3.45	3.75	3.55	3.45	3.00	3.20	2.0	2.8	2.5	2.2	2.5	2.8
0.150	3.15	3.80	3.90	3.95	3.50	3.80	3.60	3.50	3.05	3.25	2.0	2.8	2.5	2.2	2.5	2.8
0.125	3.20	3.85	3.95	4.00	3.55	3.85	3.65	3.55	3.10	3.30	2.0	2.8	2.5	2.2	2.5	2.8
0.100	3.25	3.90	4.00	4.05	3.60	3.90	3.70	3.60	3.15	3.35	2.0	2.8	2.5	2.2	2.5	2.8
0.075	3.30	3.95	4.05	4.10	3.65	3.95	3.75	3.65	3.20	3.40	2.0	2.8	2.5	2.2	2.5	2.8
0.050	3.35	4.00	4.10	4.15	3.70	4.00	3.80	3.70	3.25	3.45	2.0	2.8	2.5	2.2	2.5	2.8
0.025	3.40	4.05	4.15	4.20	3.75	4.05	3.85	3.75	3.30	3.50	2.0	2.8	2.5	2.2	2.5	2.8
0.000	3.45	4.10	4.20	4.25	3.80	4.10	3.90	3.80	3.35	3.55	2.0	2.8	2.5	2.2	2.5	2.8

Remarks

a Immediate O₂ demand (20 minutes) = 15.6 ppm

b Dissolved oxygen - day after agitation, 7.3

c Collected - 15,160 ppm
d Collected - 13,750 ppm, 7.1 before agitation, 7.3

e Collected - 11,600 ppm

f Collected - 16,300 ppm

g Collected - 12,000 ppm

h Collected - 12,000 ppm

i Collected - 12,000 ppm

j Collected - 12,000 ppm

k Collected - 12,000 ppm

l Collected - 12,000 ppm

m Collected - 12,000 ppm

n Collected - 12,000 ppm

o Collected - 12,000 ppm

p Collected - 12,000 ppm

q Collected - 12,000 ppm

r Collected - 12,000 ppm

s Collected - 12,000 ppm

t Collected - 12,000 ppm

u Collected - 12,000 ppm

v Collected - 12,000 ppm

w Collected - 12,000 ppm

x Collected - 12,000 ppm

y Collected - 12,000 ppm

z Collected - 12,000 ppm

aa Collected - 12,000 ppm

bb Collected - 12,000 ppm

cc Collected - 12,000 ppm

dd Collected - 12,000 ppm

ee Collected - 12,000 ppm

ff Collected - 12,000 ppm

gg Collected - 12,000 ppm

hh Collected - 12,000 ppm

ii Collected - 12,000 ppm

jj Collected - 12,000 ppm

kk Collected - 12,000 ppm

ll Collected - 12,000 ppm

mm Collected - 12,000 ppm

nn Collected - 12,000 ppm

oo Collected - 12,000 ppm

pp Collected - 12,000 ppm

qq Collected - 12,000 ppm

rr Collected - 12,000 ppm

ss Collected - 12,000 ppm

tt Collected - 12,000 ppm

uu Collected - 12,000 ppm

vv Collected - 12,000 ppm

ww Collected - 12,000 ppm

xx Collected - 12,000 ppm

yy Collected - 12,000 ppm

zz Collected - 12,000 ppm

aa Collected - 12,000 ppm

bb Collected - 12,000 ppm

cc Collected - 12,000 ppm

dd Collected - 12,000 ppm

ee Collected - 12,000 ppm

ff Collected - 12,000 ppm

gg Collected - 12,000 ppm

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ii Collected - 12,000 ppm

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ss Collected - 12,000 ppm

tt Collected - 12,000 ppm

uu Collected - 12,000 ppm

vv Collected - 12,000 ppm

ww Collected - 12,000 ppm

xx Collected - 12,000 ppm

yy Collected - 12,000 ppm

zz Collected - 12,000 ppm

aa Collected - 12,000 ppm

bb Collected - 12,000 ppm

cc Collected - 12,000 ppm

dd Collected - 12,000 ppm

ee Collected - 12,000 ppm

ff Collected - 12,000 ppm

gg Collected - 12,000 ppm

hh Collected - 12,000 ppm

ii Collected - 12,000 ppm

jj Collected - 12,000 ppm

kk Collected - 12,000 ppm

ll Collected - 12,000 ppm

mm Collected - 12,000 ppm

nn Collected - 12,000 ppm

oo Collected - 12,000 ppm

pp Collected - 12,000 ppm

TABLE 4-F
SAMPLING PERIOD NO. 3
September 15 and 16, 1953

Time	Sampling Station No. 20							
	D.O., ppm		B.O.D., ppm		Sulfide, ppm		B. Coli Index, per ml.	
	Surface	Deep	1-Day	5-Day	Surface	Deep		
1	2	3	4	5	6	7	8	
1115 1755 0930					8.0 7.0			
	11.0							

Sampling Station No. 21								
1	2	3	4	5	6	7	8	
1130 1735 0915					6.0 4.0			
	5.0							

Sampling Station No. 22								
1	2	3	4	5	6	7	8	
1310 1725 0845					10.0 6.0			
	5.2							

TABLE 5
SAMPLING PERIOD NO. 4
OCTOBER 22 and 23, 1953

Sampling Station No. 1						Sampling Station No. 4					
Time	D.O., ppm		B.O.D., ppm		B. Coli Index, per ml	Time	D.O., ppm		B.O.D., ppm		B. Coli Index, per ml
	Surf.	Deep	1-Day	5-Day		Surf.	Deep	1-Day	5-Day		
1	2	3	4	5	6	1	2	3	4	5	6
1040	4.4	4.0				1040	7.2	7.5			
1200	6.9	6.9	2.6		100	1200	7.3				
1420	6.9					1435 ^a	5.3	5.3	-1.5	0.3	10
1740	4.5	3.5				1740	7.2				
2100	4.3					1735	6.9	6.7			
0100	6.7					1840	5.6				
0245	7.3	6.7	0.6	1.2	1000*	2200	7.3	6.4			
0340	5.1	6.7	-0.4			0237					
0625	3.0	3.5				0800	6.4	6.5	0.3	0.9	10
0900	4.2		2.8			0650	7.1	6.9			
1120	7.0										

Water Temperature - 58 to 59 °F.

Microscopic Examinations: Ooclastria
(Chlorophytes)

Sampling Station No. 2						Sampling Station No. 4A					
1	2	3	4	5	6	1	2	3	4	5	6
1100	6.0					1030	7.6	7.6			
1340	6.9					1115	7.4				
2150	7.0					1425	6.7	7.3	0.6		1
1810	4.8					1535	7.1				
2115	2.9					1740	7.2	6.9			
0105	6.1					1630	6.6				
0415	5.3					2210	7.1	6.9			
0615	4.4					0247	7.1	7.5	-0.4		
1130	5.6					0415	7.7				
						0915	6.9	6.9	-1.2		
						0930	7.4	7.2			
Sampling Station No. 3						Sampling Station No. 4B					
1	2	3	4	5	6	1055	7.0				
1111	5.6	4.4				1215	7.1				
1325		6.9				1450	7.2				
1700	6.8	6.9				1530	7.4				
2125	2.3										
0110	6.0										
Sampling Station No. 3A						Sampling Station No. 4C					
1	2	3	4	5	6	1010	7.5	7.4			
1050	7.3					1250	7.5				
1207	6.9					1410	7.1	7.7			
1440	7.3					1525	7.6				
1515	7.4					1750	7.0	7.2			
						1815	7.2				

TABLE E-4
SAMPLING PERIOD NO. 4
October 22 and 23, 1953

Sampling Station No. 5						Sampling Station No. 7					
Time	D.O., ppm		E.C.D., ppm		B.Coli Index, per ml	Time	D.O., ppm		E.C.D., ppm		B.Coli Index, per ml
	Surface	Deep	1-Day	5-Day			Surface	Deep	1-Day	5-Day	
1	2	3	4	5	6	1	2	3	4	5	6
1110	7.0	7.3				1055	6.2				
1210	7.2					1200	7.2				
1455 ^a	7.2	6.3	0.3	0.9	100	1455	7.3				
1555	7.0					1725	3.2				
1730	6.4	6.7				2150	5.0				
1930	3.0					0117	6.7				
2145	6.5	6.5				0125	6.3				
0215 ^b	7.3	7.6	-0.6	0.6	10	0220	4.8				
0437	7.0					1105	6.7				
0745 ^{c,d}	5.5	5.9	0	2.4	1000+						
0849	6.8	6.9									

^aChlorides - 16,650 ppm^bMicroscopic Examination: Possibly Clathrocystis (Cyanophyceae)^cChlorides - 16,050 ppm^dMicroscopic Examination: Chlorophyceae, flagellates, synedra (Diatomaceae)

Sampling Station No. 8					
1	2	3	4	5	6
1045	5.1	6.0			
1215	7.1	7.1			
1315	7.0				
1735	5.5				
2200	4.6				
0140	6.9				
0140	6.1				
0355	5.3				
1115	6.7				

Sampling Station No. 5A					
1	2	3	4	5	6
1120	6.1				
1510	7.6				

Sampling Station No. 9					
1	2	3	4	5	6
1030	4.1	4.6			
1220 ^a	5.3	6.9	1.2	1.3	100
1450	4.8				
1915 ^{a,c}	2.3	1.9	1.0	12.0	1000+
2255	5.9	5.7			
0320 ^{d,e}	4.7	5.6	-0.3	0.9	1200+
0610	1.8	2.5			
1930 ^{a,e}	4.8	4.6	-0.4	3.3	1200+
1935	5.9	5.6			

^aChlorides - 16,200 ppm^bChlorides - 13,650 ppm^cMicroscopic Examination:

Chlorophyceae; ciliated protozoa

^dChlorides - 15,600 ppm^eMicroscopic Examination:

Chlorophyceas

^fChlorides - 15,300 ppm^gMicroscopic Examination: Protozoa (few)

Sampling Station No. 6					
1	2	3	4	5	6
1120	6.8	7.1			
1310	7.2	7.0	3.8		
1355	7.2				
1605	7.2				
1715	3.7	3.7			
1720	6.7				
1940	4.9				
2125	4.5				
2130	5.7				
0117	6.7				
0210	7.0	7.0	-0.5	0.2	10
0452 ^{a,b}	6.7				
0730 ^{a,b}	5.4	4.5	1.0	3.3	100
0930	6.8	6.8			

^aChlorides - 15,300 ppm^bMicroscopic Examination:

Chlorophyceas; ciliated protozoa (few)

TABLE 5-3
SAMPLING PERIOD NO. 4
October 22 and 23, 1953

Sampling Station No. 10						Sampling Station No. 15					
Time	D.O., ppm		D.O.D., ppm		B. Coli Index, per ml.	Time	D.O., ppm		D.O.D., ppm		B. Coli Index, per ml.
	Surface	Deep	1-Day	5-Day			Surface	Deep	1-Day	5-Day	
1	2	3	4	5	6	1	2	3	4	5	6
1105	3.2	3.7				1110	3.1	5.6			100
1235	6.6	6.5				1130	1.3				
1510	4.3					1600	1.7				
1905	3.0	3.4				1915	3.3				1000*
2300	4.3	4.4				2300	1.8	1.6			
0010	1.6	2.7				0200	4.5	4.6			1000*
0605	0.1					0430	5.5	2.8			
0945	5.9	5.8				0700 ^a	0.0	0.0			
1000	4.2	3.9				0910 ^b	0.0	0.05			10

Sampling Station No. 11						Sampling Station No. 16					
1	2	3	4	5	6	1	2	3	4	5	6
1120	3.2	5.0				1200	2.7				
1325	5.2					1410	2.6				
1435	5.7					1625	1.2				
1530	6.3					2300	0.9	1.0			
2315	5.2					0215	2.0				
0225	5.3					0435	0.1				
0615	4.0					0710	0.6				
1010	5.2					0935 ^a	0.0				
1110	6.2										

Sampling Station No. 13						Sampling Station No. 17					
1	2	3	4	5	6	1	2	3	4	5	6
1115 ^{a,b}	5.4	1.9	1.7	1.2		1205	3.6	1.2	2.2		1000*
1515	1.3					1415	0.9				
2715	1.0	0.9				1615	1.3	2.0			
2000	2.0	1.5	0.3		1300*	2315 ^a	0.0	0.0			
0015 ^{c,d}	4.2	4.2				0230	0.1				
0215 ^{e,f}	4.6					0415	0.1		-1.8		
0500	2.1	2.4				0720	0.9		0.6		1000*
0740 ^{e,f}	3.1	0.2	3.7	7.6	2000*	1000 ^b	0.0	0.1			
1020	2.3	0.9									

^aChlorides = 16,250 ppm^bMicroscopic Examination: Ciliated Protozoa^cChlorides = 15,500 ppm^dMicroscopic Examination: Chlorophyceae^eChlorides = 13,200 ppm^fMicroscopic Examination: Ciliated Protozoa, Chlorophyceae^aSulfide = 0.0 ppm^bSulfide = 0.0 ppm

Sampling Station No. 16

^aSulfide = 0.0 ppm

Sampling Station No. 17

^aSulfide = 0.0 ppm^bSulfide = 0.0 ppm

Water Conditions in Lower San Francisco Bay

31

TABLE 5-C
SAMPLING PERIOD NO. 4
October 22 and 23, 1953

Time	Sampling Station No. 10				
	D.O., ppm.	B.O.D., ppm	B. Cali		
Surface	Deep	1-Day	5-Day	Index, per ml.	
1230	1.3				
1500	1.2				
1700	1.9				
1930	5.1				
2100	3.0	2.0	21.3		
0200	3.5				
0300	0.9				
0700	0.4				
1010	1.3				

TABLE 6.
SAMPLING PERIOD NO. 5
December 2 and 3, 1953

Sampling Station No. 1					Sampling Station No. 6				
Time	D.O., ppm		B.O.D., ppm		Time	D.O., ppm		B.O.D., ppm	
	Surface	Deep	1-Day	5-Day		Surface	Deep	1-Day	5-Day
1	2	3	4	5	1	2	3	4	5
1115	5.6	5.4	0.2		0955 ^a	5.3			
1245	3.9				1045 ^a	5.7	5.7	0.1	0.9 ^c
1410	2.6				1230	5.4			
1535	2.8				1445	4.3	5.1		
1920	2.8		2.6	3.9	1550	4.0			
2130	4.7				1650 ^b	3.0		4.5	6.6 ^b
2140	5.4				0710	6.4			
0200	2.8				0920	6.6	6.3		
0750	3.7								
0830	5.4	6.0	0.2	0.9					
1050	6.5	6.5	0.2	0.9					
Sampling Station No. 2									
1	2	3	4	5					
0945	5.6								
1030	7.0								
1210	4.9								
1335	3.6								
1530	2.9								
1730	3.2								
0650	4.4								
0900	5.2								
Sampling Station No. 3									
1	2	3	4	5					
0950	7.0								
1035	6.9	6.8	0.3						
1215	5.8								
1430	4.4	4.5							
1545	3.6								
1730	2.9	2.8	4.5						
0700	6.0								
0910	6.1	6.2							
Sampling Station No. 4									
1	2	3	4	5					
1825 ^a	5.7	5.7	0.2	1.9 ^b					
Sampling Station No. 5									
1	2	3	4	5					
1600	4.2	4.1	0.9						
Sampling Station No. 6									
1	2	3	4	5					
1030	4.4		5.8	2.9	16.2 ^a				
1215	3.6								
1325	2.4		2.2						
1500	2.5								
1800	2.1								
2150	2.0								
0635	2.3								
1010	5.5								
Sampling Station No. 7									
1	2	3	4	5					
1000	6.6								
1100	6.4								
1235	6.0								
1450	4.4								
1600	5.1								
1800	3.8								
0720	6.0								
0925	5.8								
Sampling Station No. 8									
1	2	3	4	5					
1020	6.4								
1205	5.5								
1320	3.9								
1455	4.0								
1715	2.5								
2135	4.1								
0630	3.7								
0935	6.4								
Sampling Station No. 9									
1	2	3	4	5					
1030	4.4		5.8	2.9	16.2 ^a				
1215	3.6								
1325	2.4		2.2						
1500	2.5								
1800	2.1								
2150	2.0								
0635	2.3								
1010	5.5								
Sampling Station No. 10									
1	2	3	4	5					
1030	4.4		5.8	2.9	16.2 ^a				
1215	3.6								
1325	2.4		2.2						
1500	2.5								
1800	2.1								
2150	2.0								
0635	2.3								
1010	5.5								

^aChloride = 15,810 ppm; pH = 7.5^b6-day B.O.D.^c6-Day B.O.D.

TABLE 6-A
SAMPLING PERIOD NO. 5
December 2 and 3, 1953.

Sampling Station No. 10					Sampling Station No. 16				
Time	B.O.D., ppm		B.O.D., ppm		Time	B.O.D., ppm		B.O.D., ppm	
	Surface	Deep	1-Day	5-Day		Surface	Deep	1-Day	5-Day
1	2	3	4	5	1	2	3	4	5
1010	3.7	3.6			1535	9.8			
1220	2.9				1745	10.5			
1335	2.4		2.0		2150	6.1			
1515	4.5				0100	0.2			
1855	1.6		2.0		0100	2.8			
0045	2.3				0155	1.0			
1025	4.2	5.0			1025	2.1			
					1120	2.3			
Sampling Station No. 11					Sampling Station No. 17				
1	2	3	4	5	1	2	3	4	5
1105	3.6				1120	2.5	1.0	3.2	
1240	3.3				1325	6.1			
1405	3.0				2120	9.3	9.7		
1530	5.3				1545	8.4			
1710	3.3				1600 ^a	15.4			
2740	3.3				0115	3.0	1.0	4.5	21.6 ^d
1120	4.2				0115	2.6		4.5	
Sampling Station No. 13					0300	0.8	0.6		
1	2	3	4	5	1030	1.4			
1010 ^a	2.2	3.0	4.8	12.0 ^b	1135 ^b	1.4			
1350	1.6	1.2			1135 ^c	1.4	1.4	1.4	
1135	3.0	3.4							
1605 ^b	5.5								
1525	4.8	4.0	3.5	5.3 ^d					
1945	1.6								
2105	1.3	1.6							
0030	1.4	1.1							
0315 ^c	0.5	1.2	5.7	12.2					
0730	1.4	1.6							
1000	3.6								
1110	3.3	3.6	0.9	3.1					
^a Chloride - 13,200 ppm; pH=8.1					^b Chloride - 13,600 ppm; pH=7.6				
^b Chloride - 13,650 ppm; pH=7.6					^c Chloride - 13,600 ppm; pH=7.6				
^d 6-Day B.O.D.					^d 6-Day B.O.D.				
Sampling Station No. 15					Sampling Station No. 18				
1	2	3	4	5	1	2	3	4	5
1520	2.4				1135	1.3			
1720	1.6	2.6			1330	4.2			
1955	2.0				1430	7.0			
2120	1.2	1.9			1555	6.1			
0045	0.8	0.8			1730	9.3			
0345	0.4	0.6			2200	0.9			
0740	1.0	1.0			0130	1.0			
1015	2.6				0430	0.4			
1120	2.8	2.9			0915	1.4			
					1040	2.6			
					1150	3.2			

TABLE 6-B
A REPORT ON
MICROSCOPICAL EXAMINATION OF WATER

Source of Sample: Sampling Station No. 17

Date Collected: 3 December 1953; 1135

Organisms	Aver. Size Std Units	Survey Count	Number of Organisms or Standard Units										Std Units per ml Survey	Total Count ^a		
			Total Count of Fields													
			1	2	3	4	5	6	7	8	9	10				
Green Algae	20 μ	-	70	26	50	33	29	37	46	31	30	32	42,700			
Diatoms																

^aNumber of Organisms

TABLE 7
ANALYSIS OF SEWAGE
CITY OF SAN JOSE

Determination	Date	Volume, MGD ^a	Sampling Period			16.7	17.1	17.4
			2	3	4			
Total Solids	August 16-19, 1953	25.3	September 15-16, 1953	26.0	October 22-23, 1953	16.7	17.1	17.4
Total Volatile Solids		2,762	2,866	3,195	692	2,016	2,000	191
Suspended Solids		1,923	1,031	2,038	1,035	719	706	67
Volatile Suspended Solids		1,311	917	1,371	95	325	345	33
Settlesible Solids		373	79	365	75	228	195	19
Volatile Settlesible Solids		254	75	362	72	211	21	19
Dissolved Solids ^b		311	66	252	61	156	226	31
Dissolved Volatile Solids ^c		2,318	1,539	2,756	287	1,721	1,658	168
5-Day 3.0.D.		2,318	324	2,663	353	1,827	1,611	159
5-Day 3.0.D., Settled		1,239	274	1,220	209	1,033	76	70
1-Day 3.0.D.		822	173	860	130	214	180	16
1-Day 3.0.D., Settled		822	173	860	182	229	202	24
Alkalinity, (CaCO ₃)		130	21	300	236	113	272	216
Chlorides								
pH				5.0	5.2	8.4	8.4	8.6

^aAverage hourly flow over sampling period, million gallons per day.

^bComputed by difference.

^cBiochemical Oxygen Demand.

Sewage samples collected at Brown Ranch Gating Station in City of San Jose on all seven days of sampling period (except 4:00 A.M. sample not taken) and composited according to flow.

DEPARTMENT OF FISH AND GAME

Report on Bottom Mud Samples

"As a follow-up to the bottom sampling done in the south bay on October 22, 1953, I am submitting a more formal report than was possible in the field.

The stations, as listed below, are in order from the outer bay inward and up Coyote Creek. The station numbers are yours, and the various comments are copies directly from my field notes.

- Station 4C 1 snail; worms (capitellids); Gemma (clams); soft grey mud.
- Station 4A worms; Gemma and another clam; dead Tapes (clam) shells; poor sample.
- Station 4 2 clams; worms; poor sample.
- Station 3A worms; clams; Gemma and another; soft mud and shells.
- Station 4B worms, Neanthes succinea; Gemma (clams); soft grey mud.
- Station 5 worms, capitellids, N. succinea; Nassarius (snail); Gemma and another clam; Kedielus (mussel); black and grey mud; many tubes (maybe Corophium, amphipod).
- Station 5A clams, Gemma and another; worms, capitellids and others; soft grey mud.
- Between 3 & 6 worms, N. succinea and capitellids; many dead clam shells, maybe living Gemma; snails, Nassarius; many dead oyster shells; sample is 2-3 inches deep.
- Station 1 worms, capitellids and cirratulids (?); empty clam shells.
- Station 11 worms, capitellids; 3 Gemma
- Station 9 2 Gemma; 2 capitellids; tomatoe skins (?); much plant material; black mud.
- Station 10 no animals; 4-5 bits of broken shells; plant material.
- Station 13 no sample taken.
- Station 15 no animals; dead clam shells; plant material.
- Station 16 no animals; no shells; plant material.
- Station 17 no animals; no shells; plant material.

You will notice that no sample was taken at station 13. This was due to fact that at the time of arrival at the station, the tide was ebbing to such an extent that it was impossible to obtain a sample, the dredge being used requiring relatively stationary water.

It would appear then, that a line of animal life on absence of animals would pass across Coyote Creek sometime between stations 9 and 10. I would, however, caution you about using this too dogmatically. It is my opinion that the upper limit of animal life is a function of pollution from above, salinity from below, tidal effects, rain water run-off, dissolved oxygen and turbidity, to name a few variables. As you can see, this upper limit will vary with the season, and what is true now may well not have been the case during the summer or winter.

Department of Fish and Game

By Meredith Jones

LOWER SAN FRANCISCO RIVER
SAMPLING PROGRAM

LOCATION OF
SAMPLING POINTS

BROWN & CALDWELL, ENGINEERS
SAN FRANCISCO, CALIFORNIA

JANUARY 1954 FIGURE NO. 1



